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AUTHOR Scott, Marc A.; Bernhardt, Annette
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ABSTRACT

A longitudinal study of two cohorts of young white men (the first followed from the late 1960s through the 1970s; the second from the 1980s through the early 1990s) determined that long-term wage growth between the ages of 16 and 36 has both declined and become significantly more unequal for the recent cohort. The declines have been concentrated among less-educated workers (high school dropouts and high school graduates). While workers with sub-bachelor's degrees or only some college experience have a clear advantage over high school graduates in terms of wage growth, that advantage has not increased noticeably in recent years. By contrast, young adults with a bachelor's degree or higher have seen increases in their wage growth, although those with more practice-oriented degrees have had higher wage growth than those with more theoretical degrees. Education pathways have a strong effect on long-term wage growth. Working while enrolled has a positive impact; interrupted schooling has a very strong negative impact. These trends raise a difficult challenge to public policies aimed at improving the living standards and upward mobility of American workers. Developing policies that support more flexible education paths and choices about field of study may help. (KC)

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Pathways to Educational Attainment: Their Effect on Early Career Development

Marc A. Scott
Annette Bernhardt

After a period of stagnant productivity and large trade deficits in the 1980s, the United States economy has bounced back and is showing renewed vitality and global competitiveness. Yet the striking increase in wage inequality that started in the late 70s has not been reversed, and the wage stagnation that accompanied it has only recently begun to lessen. While some youth follow the traditional career path, eventually settling into a stable job with regular wage gains over time, others increasingly cycle between a series of low-wage and dead-end jobs, and miss the income growth that is the backbone of upward mobility (Duncan, Boisjoly & Smeeding, 1996; Newman & Lennon, 1995).

During the 1980s and 1990s, real wages plummeted for workers with few skills and little education. By contrast, workers with college degrees actually saw a mild increase in real wages (Levy & Murnane, 1992; Danziger & Gottschalk, 1993). This has led many policy makers to stress the rising returns to education in the labor market. But education effects only go so far in explaining the overall growth in inequality, more than half of which has occurred within groups of workers of the same education, age, and experience (Katz & Murphy, 1992). In the new economy, a simple count of completed years of education misses an entire spectrum of routes to success and failure. From the standpoint of education, training, and school-to-work policy, it is important that we understand why.

In this Brief, we focus on how young adults acquire their education, developing a dynamic approach that incorporates the continuity of schooling, the combination of schooling with work, as well as decisions about high school curriculum, fields of study in college, and industry and occupation. We identify workers taking different educational and working paths and ask which of these leads to long-term wage growth and career development.

We compare longitudinal data on early career development for two cohorts of young white men—the first is followed from the late 1960s through the 1970s; the second from the 1980s through the early 1990s. Our focus on the total amount of wage growth attained between the ages of 16 and 36 allows us to ask how and why upward mobility has changed. First, we compare the two cohorts of young workers, describing changes over the past thirty years in wage growth, distinct education paths, and the effects of those paths on wage growth. We then focus on the recent cohort only: the young men who entered the labor market in the 1980s and experienced the negative trends in wages that have garnered so much policy concern. Because data quality is much better for this cohort, we are able to test whether there are characteristics of early career development—beyond simply the amount of education gained—that lead to success or to failure in the new labor market.

DATA AND MEASURES

Data

We compare two data-sets from the National Longitudinal Surveys; both are nationally representative samples of young men who were aged fourteen to twenty-two in the first survey year. The National Longitudinal Survey of Young Men (NLSYM) is a sample of young men born between 1944 and 1952 who were surveyed in 1966 and tracked until 1981, re-interviewed yearly except for 1972, 1974, 1977, and 1979. The National Longitudinal Survey of Youth (NLSY) is a sample of young men born between 1957 and 1965 who were surveyed in 1979 and interviewed yearly through 1994. We refer to the former as the "original cohort" and to the latter as the "recent cohort." The sample sizes are 2,743 and 2,434, respectively, for the original and recent cohorts.

We observe both cohorts across a full sixteen years, at exactly the same ages (from their late teens to their mid-thirties), with comparable information on schooling, work history, and job characteristics.

Measures

Wages are measured as the respondent's hourly wages at his main employer at the date of the interview. We focus on hourly wages rather than yearly earnings because the latter are confounded by hours and weeks worked and the number of jobs held during the year. Instead of wages at one point in time, we focus on *total wage growth* from age 16 to 36, because it is the most fundamental measure of upward mobility. Basing the level of education attained on two measures, the number of years of schooling and the highest degree obtained, we identify six categories: high school dropouts, high school graduates, individuals with some college experience (no degree), two-year college graduates (associate's degrees), bachelors' graduates, and those with masters or higher degrees (we refer to these simply as masters' graduates).

Analysis of the sequences of schooling and work over the sixteen-year period in each survey revealed three distinct "pathways." If an individual completes all of his schooling in one continuous spell without working, we label that path "exclusive enrollment." Paths with one continuous education spell, but during which the individual works at least one year, are labeled "working while enrolled." Third are those who interrupted their education for at least one year and then returned to school. These individuals may have been working, unemployed, or merely out of the labor force, but in all cases they were not in school, so we label these "interrupted enrollment."

THE RISE IN INEQUALITY

Compared to the original cohort, long-term wage growth has both stagnated and become more unequal for the recent cohort. Fewer workers now have wage gains in the middle of the distribution, while more workers have either large or low wage gains. In fact, there is a significant increase in workers who actually experienced real

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wage losses over the twenty-year period.

Compared to the original cohort, high school dropouts have seen the strongest decline in mean wage growth in recent years, followed by high school graduates and those with some college experience. Over 14 percent of recent-cohort dropouts experienced wage losses, while less than 1 percent did so in the original cohort. For those with associate's degrees, there is no significant cohort difference in wage growth, an important point. Apparently, the increased demand for skills and education in the new labor market has not trickled down far enough to affect those holding less than a bachelor's degree. Conversely, workers who hold a bachelor's degree or higher have done well, experiencing greater wage growth than in the past. Thus wage inequality *between* education groups has grown.

Within education groups, the variance (or inequality) of wage growth for high school dropouts has nearly tripled, and for high school graduates has nearly doubled. This increased inequality, when combined with the stagnant wage growth described above, has clearly hurt less-educated workers in recent years. Many more are experiencing real wage losses over the twenty-year period. But those with more education have not been immune. While bachelors' and masters' graduates have experienced real wage growth in recent years, they have also seen growing inequality. The variance in wage growth for bachelors' graduates increased by 60 percent, for masters' graduates by 72 percent. Moreover, the magnitude of these variances in the recent cohort is large. Thus, while it is true that education has grown in importance, it is no longer a guarantee of success to the extent that it once was.

TRENDS IN EDUCATION PATHWAYS

We have shown that while lack of education has played a role in the recent deterioration in wage outcomes, there is still considerable variation within each education group. The timing of education and how it is combined with work may influence wages in different ways (cf. Light, 1995). By better understanding the context in which education is obtained, we may thus be able to explain more of the observed variation in outcomes.

In general, young adults in recent years are more likely to be in school at later ages and therefore take longer to complete their education. For most of the educational groups, the recent cohort averages about an additional year in school as compared to the original cohort. For example, among youth with some college experience, 50 percent of the original cohort had not yet completed their education by age twenty-one, while this figure is almost 80 percent in the recent cohort. Among bachelors' graduates, 50 percent of the original cohort had not completed their degree by age 24, while 60 percent had not done so in the recent cohort.

The prevalence of exclusive enrollment has dropped for all education levels. In fact, working while in school is now the dominant pathway for most education groups—between one-half and two-thirds take this route. There has also been a pronounced rise in interrupted schooling among the less educated, especially for those who go to college but who do not receive a degree or who stop at an associate's degree. By contrast, interruptions are far less common among bachelor's graduates. Thus we see greater volatility in the educational experiences of the less educated, and a reduction in volatility for the more educated.

The important question, then, is how wage growth is affected by working while in school or interrupting enrollment, now that these are the dominant pathways. Choices about which education pathway to take have a greater impact in the recent cohort. Working while enrolled yields, on average, 36 percent higher wage growth than exclusive enrollment, while this increase was only 17 percent in the original cohort. On one level, this is encouraging, since working while enrolled has become much more common in recent years. But so has interrupted schooling, and interruptions are now more detrimental than they were in the past, yielding a drop of eight percent in wage growth in the recent cohort compared to five percent in the original. This difference is even stronger among sub-baccalaureate youth—the groups that are interrupting their schooling the most. Thus the recent shift toward "non-traditional" pathways into the labor market has been beneficial for some workers, but not for others. The deterioration in wage growth when interrupting and then returning to school is a worrisome trend in an economy where lifelong learning and skill upgrading have become so important.

DYNAMIC MODELS

To explore other factors that might play a role and that might interact with the education pathways, we shift to a modeling framework, using multiple regression. An obvious question is the extent to which college field of study might influence some of the patterns described above, especially the increased variability in wage outcomes. Similar questions can be asked about high school curriculum track and the industries and occupations in which these young workers find jobs. Because the data for the original cohort do not offer sufficient information on these dimensions, we limit the remainder of our analysis to the recent cohort only. We are trying to identify the factors that make for success (or lack of it) in the new labor market of the 80s and 90s.

Baseline Model

We begin with a simple model that regresses permanent wage growth on education, with high school graduates as the reference group. The results confirm the above descriptive findings: the premium for college degrees is more than twice that of "some college" and associate's degrees. Unsurprisingly, not completing high school has a negative effect. Compared to high school graduates, dropouts have lower wage growth, but the difference between the two groups is not strongly significant. This simple model—regressing wage growth on education—explains a substantial 18

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percent of the variance in wage growth, and will serve as a baseline against which to judge the additional impact of the other factors.

Education Pathways

Adding our measures of pathways to the model, we find that they have a strong impact on long-term wage growth. A single interruption to schooling reduces wage gains significantly, and more than one interruption reduces growth even more. The loss is of the same magnitude as the gains from "some college" and associate's degrees, so interruptions can, in effect, nullify the value of obtaining college experience. Moreover, because we capture only its direct effect, we are probably underestimating the negative impact of interrupted schooling. The indirect effect is that some who interrupt their schooling never go back to school, and end up with less education and therefore lower wage growth.

Working while enrolled yields strong positive gains in long-term wage growth, but it is possible that this variable may be capturing respondents who have been in the labor market longer. Adding years of experience (at the last time the individual is observed) does not yield a statistically significant effect; however, it does reduce the positive effect of working while in school. Unfortunately, we cannot disaggregate the two effects, since most individuals in our sample work at some point while they are in school. The negative impact of interruptions persists with several different controls in place: workers on interrupted pathways lose many of the gains they were trying to achieve.

Choice of Industry and Occupation

What is the effect of the choice of industry and occupation on long-term wage growth? To keep the analysis manageable, we have defined the following groupings. For industries, the categories are: (1) construction, mining, and agriculture; (2) manufacturing, transportation and communication, and public administration; (3) wholesale and retail trade, and business services; (4) finance, insurance, and real estate (FIRE); (5) professional services; and (6) public administration. The occupational categories are: (1) professional, managerial, and technical ("white collar"); (2) clerical, sales, private household, and service ("pink collar"); and (3) crafts, operatives, farm, and other laborers ("blue collar"). Our respondents are observed at several time points in their careers, and the industry and occupation of that employment could be different at different times. Thus, in our models, we only use the most recent observation—the *destination* industry and occupation.

Not surprisingly, wage growth in wholesale and retail trade is lower than in manufacturing and construction, since the latter are unionized industries. The lower wage growth in wholesale and retail trade is enough to offset the premium for "some college" and associate's degrees. We also find that pink-collar wage growth is not significantly different from blue-collar wage growth. On the other hand, jobs in white-collar occupations and in FIRE industries yield strong, positive wage growth. Interruptions remain highly detrimental, and working while enrolled is generally beneficial to wage growth, even after controlling for education, industry and occupation effects.

High School Curriculum

In aggregate, for everyone combined, high school curriculum has a strong overall effect. Compared to the academic track, the vocational/general track has a strong negative effect on wage growth—although there is mild evidence that vocational curricula offer some value to those who do not complete high school degrees. When we disaggregate the effect and ask, "For which education groups does high school curriculum have an effect?" we see differences. For those with "some college," an academic curriculum has a strong positive payoff for wage growth, while a vocational track does not. Notably, there is no such bifurcation for those with associate's degrees. The value of the associate's degree in the labor market is not mediated by the curriculum taken in high school, so it apparently offers a "fresh start" even to those with voc-ed backgrounds. Similarly, in terms of wage growth, if one completes a four-year degree, it is not important what one studied in high school.

College Field of Study

The college field of study further differentiates the wage growth of individuals. We collapsed field of study into two categories: applied and theoretical. Architecture, business, communications, computer and information science, engineering, health professions, law, military science, and public affairs share a practitioner orientation, so we categorized them as "applied." "Theoretical" fields include biological sciences, foreign languages, letters, mathematics, physical sciences, and social sciences.

Applied majors show strong positive effects on the wage growth of respondents with bachelor's degrees and higher. What is surprising is that applied fields do not appear to pay off significantly for workers with associate's degrees or only some college experience—one might expect that practical, usable skills would be even more important in the absence of high educational credentials. However, the sample size for associate degree holders is quite small, and Grubb (1997) found a significant wage pay-off for applied field of study for this group.

INEQUALITY REVISITED: SUMMARY AND DISCUSSION

Long-term wage growth between the ages of 16 and 36 has both declined and become significantly more unequal for the recent cohort. The declines have been concentrated among less-educated workers, i.e., high school dropouts and high school graduates. While workers with sub-baccalaureate degrees or only some college experience have a clear advantage over high school graduates in terms of wage growth, that advantage has not increased noticeably in recent years. By contrast, young adults with a bachelor's degree or higher have seen increases in their wage growth. The rising demand for education and skill in the new labor market has apparently benefited only those with four-year college degrees.

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Institute on Education and the Economy
Box 174, Teachers College, Columbia University
New York, New York 10027
212-678-3091 Fax: (212) 678-3699
iee@columbia.edu
http://www.tc.columbia.edu/~iee
Director: Thomas R. Bailey
Managing Editor: Lisa Rothman

Education is not the whole story, however, because we found rising inequality in wage growth *within* all education groups; educational credentials no longer ensure success with the certainty that they once did. Thus, while there has been a dramatic reduction in mobility opportunities for less-educated young men, there are now many more extreme winners and losers even among the well educated.

These trends raise a difficult challenge to public policies aimed at improving the living standards and upward mobility of American workers. It is insufficient to simply push for more education. Moreover, bachelor's degrees are (and will remain) outside the reach of the majority of workers in the foreseeable future. The common response has been to call for greater use of community colleges and sub-baccalaureate college degrees. Yet wage growth for holders of such degrees has remained flat over the past three decades (though it is still higher than that of high school graduates). Part of this may be due to a perception problem on the part of employers, but it may also have to do with lack of adequate preparation on the part of the students.

We therefore asked whether other aspects of the way young adults now acquire education might help us explain the rise in inequality and also better inform education and training policy. Using multiple regression models, we found that education pathways have a strong effect on long-term wage growth: working while enrolled has a positive impact; interrupted schooling has a negative impact. In fact, the negative impact of interruptions is strong enough to offset other choices that these young workers make (e.g., about how much education to get, which major to study, which industry to enter). Since these pathways have become dominant in recent years, it is clear that decisions about how to pursue education are critical in determining success in the new economy. In addition, we found that taking an academic track in high school can pay off for some workers—those who get some college credit but do not attain a degree, and those who enter occupations that require cognitive skill. Once in college, the applied fields of study offer the most long-term wage growth to those receiving a degree.

Our findings may therefore point the way to policy changes. For example, the trend toward working while in school has apparently been beneficial to many workers. This would suggest the development of policies that support more flexible education paths, in particular, the mixing of work and schooling over time. Greater flexibility in choices about field of study and occupational direction may be helpful as well.

It is also clear that interruptions to school have a strong, negative impact on wage growth. For youth with few resources, however, interruptions and returns to school may be the only way to attain better education credentials. Theoretically, the argument for continuous learning in a knowledge-based economy is attractive; the reality, however, is that many young adults who make a considerable effort to upgrade their skills are not faring well. Educational policy, perhaps in the form of financial help or innovative enrollment programs, could have a strong impact on worker welfare.

Clearly, for some workers, increased movement between school and work in the search for more education has few long-term benefits and reduces the chance to build continuous tenure with one employer. A better understanding of the conditions under which choices about work and education do, and do not, pay off is an important agenda for future research. Such research should give close attention to the experiences of less-educated workers—those at the bottom of the labor market who need the most help from public policy.

Marc Scott and Annette Bernhardt are Senior Research Associates at the Institute on Education and the Economy at Teachers College, Columbia University.

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